



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,485	06/17/2002	Nikolay Borisenko	GOW 0082 PA	9461

7590 12/23/2004
Killworth Gottman
Hagan & Schaeff
One Dayton Centre Suite 500
One South Main Street
Dayton, OH 45402-2023

EXAMINER

THOMAS, ERIC W

ART UNIT PAPER NUMBER

2831

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,485

Applicant(s)

BORISENKO ET AL.

Examiner

Eric W Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

INTRODUCTION

Claim Rejections - 35 USC § 103

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

-

Regarding claim 1, Hart et al. disclose in fig. 1, a high capacitance energy storage device, comprising: a housing electrically (4, 6) isolated from, and lined with, conductive, chemically inert separators (3), said separators electrically connected to contacts mounted on said housing (not shown); at least one capacitive cell having a first electrode (1) separated from a second electrode (1) by a non-conductive, chemically

Art Unit: 2831

inert membrane (2), said electrodes formed of a carbon material impregnated with an electrolyte (see col. 4 lines 15-20) said cell being in electrical and mechanical contact with said separators.

Hart et al. disclose the claimed invention except for the electrodes are formed of a regularly structured carbonized and activated woven fabric.

Borisenko et al. teach that it is known in the capacitor art (electric double layer capacitor art) to form polarizable electrodes from a regularly structure carbonized activated carbon fabric impregnated with an electrolyte wherein the electrodes are formed from a "hydro cellulose" material.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the electrodes of Hart et al. using the electrodes formed of a regularly structured carbonized and activated woven fabric as taught by Borisenko et al., since such a modification would produce electrodes having high specific energy and current density while having a low electrical resistance.

Regarding claim 3, Hart et al. disclose the separators consist of graphite sheets (col. 3 lines 10-20, col. 3 lines 65-75).

Regarding claim 4, Hart et al, disclose the claimed invention except for the separators consists of a conductive rubber. Conductive rubbers are well known in the capacitor art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the separator of Hart et al. using a conductive rubber, since it has been held to be within the general skill of a worker in the art to

Art Unit: 2831

select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 5, Hart et al. disclose the claimed invention except for the separators consists of a conductive polymer film. Conductive polymer films are well known in the capacitor art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the separator of Hart et al. using a conductive polymer film, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 6, Hart et al. disclose the separators are formed from a graphite foil.

Regarding claim 7, Hart et al. disclose the electrolyte is a sulfuric acid (col. 5 lines 10-25).

Regarding claim 8, Borisenko et al. teach that the carbonized activated woven fabric is a "hydro cellulose".

Regarding claim 10, Hart et al. disclose the capacitor further comprises a single separator (3) that separates another capacitor cell from the capacitor cell.

Regarding claim 11, Hart et al. disclose in fig. 1, a capacitive cell for a high energy storage device comprising a first electrode (1) separated from a second electrode (1) by a non-conductive chemically inert membrane (2), the electrodes are formed of a carbon material impregnated with an electrolyte, the chemically inert membrane permitting free passage of molecules of the electrolyte there through.

Art Unit: 2831

Hart et al. disclose the claimed invention except for the electrodes are formed of a regularly structured carbonized and activated woven fabric.

Borisenko et al. teach that it is known in the capacitor art (electric double layer capacitor art) to form polarizable electrodes from a regularly structure carbonized activated carbon fabric impregnated with an electrolyte wherein the electrodes are formed from a "HYDRO CELLULOSE" material.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the electrodes of Hart et al. using the electrodes formed of a regularly structured carbonized and activated woven fabric as taught by Borisenko et al., since such a modification would produce electrodes having high specific energy and current density while having a low electrical resistance.

Regarding claim 12, Hart et al. disclose the electrolyte is a sulfuric acid (col. 5 lines 10-25).

Regarding claim 13, Borisenko et al. teach that the carbonized activated woven fabric is a "hydro cellulose".

Regarding claim 15, Borisenko et al. disclose the claimed (structural) invention. Regarding the limitation, "wherein the device is assembled at pressure of about 2 to about 6 kg/cm² (about 30 to about 80 psi)" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 16, Borisenko et al. disclose the claimed (structural) invention. Regarding the limitation, "wherein the device is assembled at pressure of about 2 to about 6 kg/cm² (about 30 to about 80 psi)" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 17, Borisenko et al. disclose the claimed invention except for the carbonized and activated woven fabric exhibit a specific surface area of 800 to 2000 m²/g, a total porosity of 0.25 to 0.80 cm³/g, and surface density of 100 to 300 g/m².

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the fabric to having a specific surface area of 800 to 2000 m²/g, a total porosity of 0.25 to 0.80 cm³/g, and surface density of 100 to 300 g/m², since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

3. Claims 9, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hart et al. (US 3,652,902) and Borishenko et al (RU 2 054 723) as applied to claims 1 and 11 above, and further in view of Inagawa (US 6,021,039).

Regarding claims 9 and 14, Hart et al. disclose the claimed invention except for each of the electrodes is formed of a plurality of layers of the carbonized activated woven fabric.

Inagawa et al. teach that it is known in the electric double layer capacitor art to form electrodes from multiple electrode sheets.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the electrodes of Hart et al. (as modified by Borishenko et al.) using multiple layers, since such a modification would produce a capacitor having a higher capacitance.

Response to Arguments

4. Applicant's arguments with respect to claims 1, 3-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

In order to ensure full consideration of any amendments, affidavits, or declaration, or other documents as evidence of patentability, such documents must be submitted in response to this Office action. Submissions after the next Office action, which is intended to be a final action, will be governed by the requirements of 37 CFR 1.116 which will be strictly enforced.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on M,Tu,Sat 9 am - 9:30 pm; W, Th, F 6 pm -10:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2831

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'C72' followed by a long horizontal stroke.

Eric W Thomas
Examiner
Art Unit 2831

ewt